

Appl. No.: 10/697,349
Docket No.: H1799-00225
Response to Office Action of November 7, 2005

REMARKS/ARGUMENTS

As a result of this Preliminary Amendment, claims 5 – 7 have been cancelled and claims 4, 8, and 19 – 21 are under active consideration in the subject patent application. A Request for Continuing Examination (RCE) application has been filed in conjunction with this response to the Final Official Action mailed on November 7, 2005. **The Director is hereby authorized to charge the RCE fee required under 37 CFR 1.17(e), namely \$790.00, and any additional fees required to Deposit Account No. 04-1679.**

In the Final Official Action of November 7, 2005, the Examiner:

(1) acknowledged Applicant's amendment of September 1, 2005, and stated

- (a) the objections to claims 20-21 were withdrawn in view of the amendment;
- (b) the double patenting rejections of claims 1-3 and 17 were withdrawn;
- (c) the anticipatory rejections were withdrawn in view of the cancellation of claims 1-3 and 16-17; and
- (d) the obviousness rejection in view of Briscoe was withdrawn in view of the amendment;

(2) rejected claims 4-8 and 19-21 under the judicially created doctrine of double patenting over claims 3-6 of U.S. Patent No. 6,802,362 in view of U.S. Patent No. 2,046,701, issued to Przyborowski, and stated that a timely filed terminal disclaimer in compliance with 37 C.F.R. 1.321(c), may be used to overcome this rejection;

Appl. No.: 10/697,349
Docket No.: H1799-00225
Response to Office Action of November 7, 2005

(3) rejected claims 4-8 and 19-21 under 35 U.S.C. §103(a) in view of the proposed combination of Japan Patent No. 08-306836, issued to Ogawara, with Przyborowski; and

(4) rejected claims 6 – 7 as being considered method limitations in an apparatus claim.

With regard to Item 1, no comment appears necessary.

With regard to Item 2, a Terminal Disclaimer to Obviate A Double Patenting Rejection Over A Prior Patent is attached to this response and is believed to be in compliance with 37 C.F.R. §1.321(c). The Terminal Disclaimer has been signed by an Attorney of Record in the case. **The Commissioner is hereby authorized to charge the fee, namely, \$130.00, required in connection with the Terminal Disclaimer to Deposit Account No. 04-1679.** Applicant respectfully submits that the foregoing Terminal Disclaimer overcomes the Examiner's Double Patenting Rejection. Reconsideration and withdrawal of the Double Patenting Rejection of claims 4 – 8 and 19 – 21 are requested.

With regard to Item 3, independent claims 4 and 19 have been amended so as to distinguish them from the subject matter defined by the Ogawara and Przyborowski references relied on by the Examiner. In particular, claim 4 has been amended so as to make clear that the plate has at least two collar portions, each having an internal flat surface confronting said hole, and each being spaced from one another so as to define at least two slots in said plate. Claims 4 and 19 have been further amended so as to make clear that the internal flat surface of the collar portions securably engages and

Appl. No.: 10/697,349
Docket No.: H1799-00225
Response to Office Action of November 7, 2005

grips the surface of the envelope forming a compression fit between the heat pipe and the plate in the absence of bonding agents.

More particularly, Applicant claims a heat pipe assembly including a heat pipe having an envelope that has two elongated flat sides and two curved portions connecting the flat sides. In other words, the flat sides define a surface having a length that is substantially greater than a radius of curvature of the curved portions. A fin is provided formed from a plate having a hole that is sized to accommodate the envelope. The hole has two elongated flat sides and two curved portions connecting the flat sides. The elongated sides have a length that is substantially greater than a radius of curvature of the curved portions. The plate also comprises at least two collar portions adjacent to the hole that extend in a direction normal to the plate and are separated from one another by slots in the plate. Advantageously, each of the collar portions include an internal flat surface that securably engages and grips the corresponding portion of the envelope forming a compression fit in the absence of bonding agents.

In order for a prima facie case of obviousness to be established, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, and the prior art reference (or references when combined) *must teach or suggest all the claim limitations*. MPEP §2142 [emphasis added].

Nowhere within the four corners of the Ogawara or Przyborowski references, is there disclosure or even a vague suggestion of collar portions extending in a direction normal, i.e., perpendicular to the plate, separated by slots in the plate, where the collar

Appl. No.: 10/697,349
Docket No.: H1799-00225
Response to Office Action of November 7, 2005

portions each include an internal flat surface which securably engages and grips a corresponding surface portion of a heat pipe envelope forming a compression fit between the heat pipe and the plate in the absence of bonding agents, as defined in amended independent claims 4 and 19. Moreover their combined teachings, taken as a whole, do not suggest such a structure, nor would they motivate a person of ordinary skill to consider such a structure.

More particularly, the Ogawara reference discloses a flattened heat pipe whose section starts out circular and is compressed into an elliptical section (or nearly elliptical section), i.e., flattened, so as to allow for a reduced thickness in a heat receiving block (1) as compared to conventional circular heat pipe envelopes. Ogawara's main consideration is for the maintaining of a minimum thickness of the heat receiving block (1) which is facilitated by the flattening of its heat pipe. Although at paragraph 13 of the computer generated English translation of the reference (attached hereto for the convenience of the Examiner) appears to suggest that Ogawara's radiation fin (5) may include a rectangular cross-section, the Examiner properly admits that limitations regarding a collar portion are wholly absent from the Ogawara reference. Moreover, there is no suggestion or motivation provided by the Ogawara reference for the inclusion of such collars, as Ogawara is mainly focused on maintaining or minimizing the thickness of a heat receiving block (1). See, for example, the Ogawara Patent Abstract, last line ". . . *thereby the thickness of the heat receiving block (1) can be reduced, so that the heat receiving block (1) can be set in a small installation space. . .*"

The Examiner attempts to rely upon the Przyborowski reference to supply the missing teachings with regard to a hole defined by flanges (19) for the purpose of

Appl. No.: 10/697,349
Docket No.: H1799-00225
Response to Office Action of November 7, 2005

securing the fin to the tube (22). However, the flanges, as taught by Przyborowski differ in several respects to the collar portions of Applicant's claimed invention; mostly notably in their structural and functional purposes. Initially, it should be noted that Przyborowski's tube (22) to which fins are secured is a tube through which liquid to be cooled flows. Applicant has claimed a heat pipe envelope which has no flowing water traveling through it.

Importantly, Przyborowski teaches a funnel or throat-like flange with a generous base radius for guiding the water tube through an opening. Przyborowski states on page 3, column 1, lines 33 – 36, "It will be further observed that the base of the opening (18) (between the flange radii (23)) offer a generous clearance for the tube end; in fact it provides a guide throat or funnel for the tube." (emphasis added). Przyborowski's flanges cannot completely engage the tube because the base of the funnel-shaped flanges does not contact the tube. In contrast, Applicant has claimed a collar portion which extends normally, i.e., perpendicularly from the plate. In this perpendicular orientation, Applicant's collar portions are able to engage and grip the heat pipe over substantially their entire internal flat surface. This crucial difference in structure between Przyborowski's flange and Applicant's collar portions become manifestly important because of the manner in which each secures the fin to their respective tube and heat pipe.

More importantly, Przyborowski teaches a soldered connection between the flange and the tube for purposes of securing the tube to the fin. At page 2, column 1, lines 53 – 55, Przyborowski states, "the tubes are tinned or coated with solder so that . . . the parts will be bonded or integrated to each other." Further, at page 3, column 2,

Appl. No.: 10/697,349
Docket No.: H1799-00225
Response to Office Action of November 7, 2005

lines 61 – 62, Przyborowski states, “the solder on the tubes is fused to connect the fins and the tubes.” In order to accomplish this soldered connection, Przyborowski must have a space provided between the tube and the flange into which the solder can flow. This can only be accomplished with Przyborowski relying upon a funnel-like opening where there is “generous clearance” at the base of the flanges for the solder, and thus a portion of that flange base which never contacts the tube. In stark contrast to Przyborowski’s “funnel” flanges with soldered connections, Applicant claims a collar portion extending normally from the plate which “securably engages and grips” the corresponding surface portion of the heat pipe envelope “to form a compression fit . . . in the absence of bonding agents.” Thus, where Przyborowski’s flanges require solder for ultimately securing fin and tube, Applicant’s collar portions secure the heat pipe to the plate without any bonding aids; relying rather upon strictly compression and frictional forces.

Finally, Przyborowski teaches a “resilient truss” structure (“A”, “B”, & “C” in Figure 3) to compensate for irregularities in mating the flange to the tube, either because of irregularities on the exterior of the tube or misalignment of the hole. At page 3, column 1, lines 1 – 32, and Figure 3, Przyborowski teaches the advantage of using a “saddle and bead” engagement to offset irregularities in the tube-hole alignment which could cause disruptive stresses. Thus, the ability of Przyborowski’s tube and flange to effectively engage is dependent upon the resilient truss structure which utilizes a “saddle and bead” engagement. Conversely, Applicant claims collar portions separated by slots in the plate to cope with heat pipe and collar engagement irregularities. Examiner’s attention is directed to paragraph thirty-five (35) of the specification wherein

Appl. No.: 10/697,349
Docket No.: H1799-00225
Response to Office Action of November 7, 2005

Applicant states, "The addition of multiple slots (131) in the straight portion of the fin increases the ability of the fin to conform to irregular mating surfaces." Examiner's attention is further directed to paragraph twenty-five (25) of the specification wherein Applicant states, "If several . . . slots are provided, then the fin can more easily fit over the envelope (321) of the heat pipe (320) with a greater dimensional tolerance and improved thermal contact with the heat pipe." Thus, where Przyborowski's flanges are dependent upon a "truss structure" to compensate for mating irregularities between the tube and fin, Applicant's collar portions separated by slots independently adapt to any irregularities between the heat pipe and the fin.

When the teachings of Ogawara are combined with the teachings of Przyborowski, as relied upon by the Examiner, a heat pipe assembly is provided with a flattened heat pipe having a portion of its length positioned within flanged holes, where the flanges are funnel-like, with a wide base radii, wherein solder can flow to the space provided between the base of the flange and the tube to effectuate a securable bond between the tube and fins which protected from mating irregularities and disruptive forces by a truss structure comprised of saddle and bead portions. This structure is simply not taught or suggested by amended claims 4 and 19.

Accordingly, independent claims 4 and 19 are patentable over the combination of Ogawara in view of Briscoe. Moreover, dependent claims 5 and 8, and 20-21 are patentable, at least through dependency from allowable independent claims 4 and 19, respectively.

Appl. No.: 10/697,349
Docket No.: H1799-00225
Response to Office Action of November 7, 2005

With regard to Item 4, Applicant has cancelled claims 6 – 7 thus rendering moot the rejection.

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

If a telephone conference would be of assistance in advancing prosecution of the above-identified application, Applicants' undersigned Attorney invites the Examiner to telephone him at 215-979-1255.

Dated: 1/24/06

Respectfully submitted,



Samuel W. Apicelli
Registration No. 36,427
Customer No. 0041396
DUANE MORRIS LLP
30 S. 17th Street
Philadelphia, PA 19103-4196
Tel.: (215)979-1255
Fax: (215) 979-1020
swapicelli@duanemorris.com